Rationalizing the Value Premium in Emerging Markets

M. Shahid Ebrahim

Bangor University, UK

Sourafel Girma

University of Nottingham, UK

M. Eskandar Shah

INCEIF (International Centre for Education in Islamic Finance), Malaysia

Jonathan Williams

Bangor University, UK

Correspondence Address: M. Shahid Ebrahim

Professor of Banking and Finance

Bangor Business School

Bangor University

Bangor LL57 2DG

United Kingdom

Tel: +44 (0) 1248 38 8181

Fax: +44 (0) 1248 38 3228

E-Mail: m.s.ebrahim@bangor.ac.uk

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Abstract: We reconfirm the presence of value premium in emerging markets. Using the Brazil-Turkey-India-China (BTIC) grouping during a period of substantial economic growth and stock market development, we attribute the premium to the investment patterns of glamour firms. We conjecture based on empirical evidence that glamour firms hoard cash, which delays undertaking of growth options, especially in poor economic conditions. Whilst this helps to mitigate business risk, it lowers market valuations and drives down expected returns. Our evidence supports arguments that the value premium is explained by economic fundamentals rather than a risk factor that is common to all firms.

JEL Classifications: G110 (Portfolio Choice; Investment Decisions), G120 (Asset Pricing).

Keywords: Asset Pricing, Growth (i.e., Glamour) Stocks, Multifactor Models, Real Options, Value (i.e., Unspectacular) Stocks.

I. Introduction

> *"Growth stocks, which derive market values more from growth options, must therefore be riskier than value stocks, which derive market values more from assets in place. Yet, historically, growth stocks earn lower average returns than value stocks."* (Lu Zhang, 2005, pp 67)

Fama and French's (1992) finding, that a single factor encapsulating risk (beta) does not adequately explain cross-sectional differences in stock returns, has motivated an important strand of research on asset pricing, reigniting the debate on the fundamental relationship between risk and return, and challenging the widely-accepted Capital Asset Pricing Model (CAPM). Subsequently, numerous theoretical and empirical studies examine the cross-sectional variation in stock returns with many finding patterns unexplained by the CAPM and commonly known as anomalies.

This paper examines one of the most pronounced anomalies, the value premium puzzle. Portfolios formed on the basis of high book-to-market (BE/ME), cash flow-to-price (C/P) and earnings-to-price (E/P) are reported to earn significantly higher risk-adjusted returns than portfolios with contrasting characteristics. However, the previous literature fails to achieve a consensus on the source of the value premium (Chou et al., 2011). The objectives of this paper are to confirm the presence of value premium in a new market, to provide a new rationalization based on economic fundamentals, and to reconcile the diverging perspectives which are apparent in the literature. The value premium reflects a tendency for 'glamour firms' to hoard cash and delay implementation of growth strategies, particularly in times of economic uncertainty (Titman, 1985; McDonald and Siegel, 1986; Ingersoll and Ross, 1992). Since growth (glamour) stocks derive their market value from embedded growth in the form of real options (Zhang, 2005), we argue that cash hoarding limits their exposure to risk but exerts a significant detrimental impact on their stock returns.

The theoretical basis for our analysis derives from Fama and French (1995) and Daniel and Titman (1997). Fama and French (1995) develop a three-factor model, in which the factor that captures distress risk, known as HML, is lower for growth (glamour) firms than for value firms. The debate centers on whether lower distress risk accounts for the discrepancy in average returns between value firms and growth firms (Fama and French, 1995) against claims that distress risk does not contribute to the value premium (Dichev, 1998; Griffin and Lemmon, 2002). We contend that both the cash-drag factors and firm characteristics, as highlighted by Daniel and Titman (1997), are of relevance.

In comparison with value firms, growth firms face a wider array of strategic options, carrying various levels of risk. These firms may limit their exposure to risk by abstaining from investing resources in risky strategies, especially in poor economic environments. Accordingly, growth firms hoard cash when economic conditions are tough, and realize lower returns. By contrast, value firms are prominent in mature and/or declining markets and face a more limited range of options. Such firms face financial risk, as well as business risk, owing to a tendency to use existing assets as collateral in order to leverage earnings. They have less flexibility in managing their risk, because past sunk-cost investment in assets is irreversible (Zhang, 2005). Our approach in rationalizing the value premium is consistent with the neoclassical framework, in which low-risk assets yield lower returns and vice versa.

Our research draws on two recent studies that contrast the approach of Fama and French (1995) with Daniel and Titman (1997). In a similar vein to Daniel and Titman (1997), Chen et al. (2011) propose a three-factor model incorporating factors with greater explanatory power for cross-sectional returns than the Fama and French model. We aim to extend these findings, by obtaining results that are not sample-specific (a limitation of Chou et al., 2011), and by adopting a real options framework in cases where the Net Present Value investment perspective (Chen et al., 2011) is inapplicable.[1] This paper is among the few that try to reconcile differences not only between the neoclassical asset-pricing literature (Fama and French versus Daniel and Titman), but also the neoclassical and behavioral literature.

Our application is to a new grouping of four, large emerging markets: namely, Brazil, China, India and Turkey, the BTIC group.[2] Each of these economies has achieved remarkable growth since the early 2000s, which implies there are many firms endowed with plentiful growth options.[3] Our paper addresses two research questions: (i) is a statistically significant value premium present in the BTIC? (ii) is it possible to rationalize the value premium and reconcile the apparently conflicting views in the literature? To investigate questions (i) and (ii) we source relevant variables from 1999 to 2009 to allow our analysis of value anomalies to be conducted under generally favourable economic conditions including

1 Ingersoll and Ross (1992, p. 2) explain this as follows:

"If in making the investment today we lose the opportunity to take on the same project in the future, then the project competes with itself delayed in time. In deciding to take an investment by looking at only its NPV, the standard textbook solution tacitly assumes that doing so will in no way affect other investment opportunities. Since a project generally competes with itself when delayed, the textbook assumption is generally false. Notice, too, that the usual intuition concerning the "time value of money" can be quite misleading in such situations. While it is true NPV postponing the project delays the receipt of its positive NPV, it is not true that we are better off taking the project now rather than delaying it since delaying postpones the investment commitment as well.
Of course, with a flat, non-stochastic yield curve we would indeed be better off taking the project now, and this sort of paradox could not occur. But that brings up the even more interesting phenomenon that is central focus of this article, the effect of interest-rate uncertainty on the timing of investment".

2 Non-availability of data for Russia precludes investigation of the BRIC quartet (Brazil, Russia, India and China). We select Turkey as an alternative large European emerging economy, and note the creator of the BRIC acronym, Jim O'Neill, plans to include Turkey and three other emerging economies in a new grouping (Hughes, 2011).

3 The rapid growth of emerging economies, and the impact on the world economy, is discussed extensively in the popular press. For instance, the August 6th, 2011 issue of the *Economist* magazine highlights several noteworthy statistics on emerging *versus* developed economies. In 2010 emerging economies account for nearly 54% of world Gross Domestic Product (GDP) measured at purchasing power parity and 75% of global real GDP growth over ten years. Exports exceed 50% of the world total, and imports account for 47%. Foreign direct investment (FDI) to emerging economies significantly increased recently as have commodity consumption and capital spending. Stock market capitalization equals 35% of the world total, this share having tripled since 2000.

increasing stock market integration following the liberalization of equity markets in the BTIC.

By way of preview, we find a significant value premium in the BTIC which is not new for emerging markets but re-emphasizes the value premium is not a developed country phenomenon. A second result, which is based on the widely-used Altman Z-score model, shows value firms are no more prone to risk than growth firms, but value firms employ more leverage. Our evidence suggests the investment patterns of growth firms are the source of the value premium. In an asset-pricing model, the HML coefficients of growth portfolios are small during low-growth periods and considerably larger during high-growth periods. This pattern is consistent with the hypothesis that growth firms delay the implementation of new strategies in periods of economic uncertainty in order to limit their risk. The HML coefficients of growth portfolios are sensitive to changes in size (total assets). Accordingly growth in total assets, interpreted to proxy implementation of growth strategies, explains the change in business risk of growth firms. This affirms our hypothesis that the investment patterns of growth firms impact significantly on their risk and return.

Our results also resolve the various perspectives in the literature in three ways. First, Fama and French (1995) and Daniel and Titman (1997) attribute the outperformance of value stocks to different causes. Daniel and Titman (1997) explain performance differentials between value and growth stocks as being due to the characteristics of firms as opposed to covariance with risk factors. Value stocks outperform because growth firms tend to hoard cash and delay undertaking the growth options they are endowed with and this drags down their returns. In the Fama and French (1995) framework, this phenomenon is attributed to distress risk. Second, growth firms' flexibility to manage their embedded growth options to their operational and strategic advantage yields not only profit, but also provides utility in its own right: embedded options provide 'glamour firms' with an allure with which to entice investors. ‘Fascination’ with growth firms (Sargent, 1987) creates a premium in price (and hence a discount in returns), which helps reconcile the neoclassical and behavioral perspectives. Third, the over-reaction hypothesis of DeBondt and Thaler (1985 and 1987) is rationalized through the volatile nature of value firms’ leveraged equity, which is akin to Call options. These options are depressed in poor economic states but rebound in prices with improving economic climate.

This paper is organized as follows. Section II reviews the relevant literature, and identifies the research questions and methodology. Section III offers a brief synopsis of market developments in the BTIC. Section IV presents data and methodology. The results and checks for robustness are in Sections V and VI. Section VII offers concluding comments.

II. Literature Review

The Capital Asset Pricing Model (CAPM) posits that risk, measured using beta, accounts for the cross-section of expected stock returns (Sharpe, 1964; Lintner, 1965a,b; Mossin, 1966). Numerous empirical studies test the model, on the assumption that beta is the sole explanatory variable with a positive and linear relation to asset return, yet results are inconclusive. Several early empirical studies (Black et al., 1972; Blume and Friend, 1973; Fama and McBeth, 1973) provide support for the CAPM. Later studies, however, are more critical, citing evidence of anomalies and questioning the validity of the assumptions (Roll, 1977; Basu, 1977, 1983; Stattman, 1980; Banz, 1981; DeBondt and Thaler, 1985; Rosenberg et al., 1985; Bhandari, 1988; Jegadeesh and Titman, 1993; Cohen et al., 2002; Titman et al., 2004). Fama and French (1992) conclude that CAPM with a single factor does not adequately explain cross-sectional stock returns, and propose a three-factor model to capture the multidimensional aspect of risk, comprising: (i) a market factor ($R_{M-}R_f$); (ii) a size premium (SMB) (return on a portfolio of small stocks *minus* return on a portfolio of large stocks); and (iii) a value premium (HML) (return on a portfolio of value stocks with high BE/ME *minus* return on a portfolio of growth stocks with low BE/ME). This approach builds on Merton's (1973) intertemporal CAPM and Ross's (1976) arbitrage pricing theory (APT). Fama and French (1993, 1995) show SMB and HML are related to risk factors in stock returns; and both factors contain explanatory power for the cross-sectional variation in stock returns.

The three-factor model has attracted a great deal of academic interest, much of it centered on the source of the value premium. In line with the hypothesis of rational pricing, Fama and French (1993) and Chen and Zhang (1998) suggest value firms are riskier and more likely to be subject to financial distress than growth firms. Fama and French (1995) demonstrate that value [growth] stocks are generally associated with persistently low [high] earnings, creating a positive [negative] loading on HML, which implies higher [lower] risk of distress. On the contrary, Zhang (2005) claims value firms are riskier because their assets at risk are larger than those of growth firms. This becomes particularly evident in poor economic environments, where firms with fixed assets pose greater risks for investors than those with growth options. Value firms are burdened with unproductive capital that cannot be liquidated in order to recover the cost of the original investment.

More recent value premium studies investigate how differing states of the world affect the strength of the premium. The empirical evidence contained in these papers demonstrates the value premium is time varying and sensitive to changes in economic conditions. Stivers and Sun (2010) show the value premium is countercyclical and higher during periods of weak economic fundamentals whereas Guo et al. (2009) find value stocks are riskier than growth stocks under weak economic conditions. Similarly, expected excess returns on value stocks are more sensitive to deteriorating economic conditions during episodes of high market volatility (Gulen et al., 2011). Finally, the size of the value premium positively relates to its conditional volatility (Li et al., 2009).

Several alternative theories also seek to explain the value premium. Focusing on investor sentiment and trading strategies, Lakonishok et al. (1994) and Haugen (1995) attribute a tendency for value ('unspectacular') firms to produce superior returns to an irrational tendency on the part of investors to extrapolate the past strong [weak] performance of the growth [value] firm into the future. Investors overbuy [oversell] the growth [value] firm's stock. Lower [higher] than expected realized performance on the part of the growth [value] firm generates a low [high] stock return.[4] Similarly De Bondt and Thaler (1985, 1987) observe that poorly performing stocks ('losers') over the past three-to-five years outperform previous 'winners' during the subsequent three-to-five years.

Daniel and Titman (1997) claim the explanation for the value premium lies in firm characteristics rather than covariance risk. High covariance between the returns of value stocks reflects common firm characteristics, such as, the line of business or industry classification. Daniel and Titman (1997) show high covariance between stock returns bears no significant relation with the distress factor. Evidence of high covariance precedes any signs of financial distress on the part of value firms.[5]

Other possible explanations for the value premium focus on methodological issues in empirical studies. Banz and Breen (1986) and Kothari et al. (1995) suggest sample selection may be biased towards firms that survived a period of distress, rather than those that failed. The notion that survivorship bias accounts for the value premium is rejected, however, by Davis (1994), Chan et al. (1995) and Cohen and Polk (1995). Data 'snooping', an eventual

4 La Porta et al. (1997) find value firms enjoy a systematically positive earnings surprise while glamour firms display the opposite.

5 Lee et al. (2007) find stock characteristics better explain UK value premiums.

tendency for repeated testing using the same data to reveal spurious patterns is cited as an explanation for the value premium phenomenon (Lo and MacKinlay, 1988; Black, 1993; MacKinlay, 1995; Conrad et al, 2003). Any such tendency might be mitigated by testing data from different periods or countries (Barber and Lyon, 1997).

In spite of contentions that the value premium is a developed country phenomenon (see Black, 1993; MacKinlay, 1995; Campbell, 2000) other evidence supports the proposition of a value premium in emerging markets. In samples containing some (or all) of the BTIC group, Rouwenhorst (1999) uses a cross section analysis of returns across twenty emerging markets between 1982 and 1997, whereas Barry et al (2002) study 35 emerging markets from 1985 to 2000. De Groot and Verschoor (2002) confirm the value premium for a sample of south east Asian markets between 1984 and 2000. Ding et al (2005) also examine markets in south and east Asia. Their study recognizes cross country differences with respect to the value premium, but unfortunately the data it uses end prior to the Asian crisis of 1997, which is a major drawback as more recent value premium studies suggest the premium may change in an economic downturn. Given the very limited work on explaining the value premium in the context of emerging markets, many questions surrounding the value premium remain unanswered. This paper will test for the value premium during the most recent period of growth in emerging markets whilst offering a cross country perspective and it will also analyse the source of the premium in emerging markets, which few papers undertake.[6]

III. Market developments in the BTIC

The BTIC countries liberalized their stock markets between the late 1980s and mid-1990s. The benefits of liberalization include higher levels of real economic growth and real

6 One exception is a study of Singapore that attributes the value premium to a one-way overreaction of value firms (Yen et al., 2004).

investment (Bekaert et al., 2003a) with studies reporting a significant relationship between stock market liquidity and economic growth (Levine and Zervos, 1998). Liberalization is expected to increase the level of integration between emerging stock markets and the world market which should lower country risk premiums. In the 1990s emerging markets represented a new asset class and stock prices in those markets were driven upwards by investors seeking to diversify their portfolios, leading to permanently lower costs of capital in the emerging markets (Bekaert and Harvey, 2003). Several studies propose methods to effectively date when liberalization takes place (see, Bekaert et al, 2003b; Kim and Kenny, 2007).[7] We calculate several indicators to proxy stock market development and growth in the BTIC (Source: World Development Indicators). In 2010, the BTIC share of global stock market capitalization equals 15.10% (US$ 8 trillion) increasing by nearly five-fold since the 2000 level of 3.18%. The ratio of listed firms' market capitalization-to-GDP measures the level of stock market deepening and it shows the combined BTIC stock market is nearly two times deeper in 2010 compared to 2000 (78.47% *c.f.* 39.66%). Similarly, the BTIC stock markets are more liquid as measured by the ratio of value of stocks traded-to-GDP. Taking 1992 as a year to represent pre-stock market liberalization, liquidity increases by a factor of eight in Brazil (42.09% in 2010); over thirty four in China (135.40% in 2010); almost nine in India (62.74% in 2010); and over eleven in Turkey (57.66% in 2010).

IV. Data and Methodology

We source data on listed firms in Brazil, Turkey, India and China for the period 1999 to 2009 from DataStream. The sample firms meet standard criteria employed widely in the literature: stock prices are available for December of year t-1 and June of year t, and book

7 The year of equity market liberalization in the BTIC is as follows: Brazil, 1991; China, 1995; India, 1992; and Turkey, 1989 (Kim and Kenny, 2007).

value for year t-1; and each firm has at least two years' complete data.[8] Table A1 in the Appendix shows the number of firms belonging to each portfolio by country and year.

In order to identify the existence of a value premium, we employ the standard Fama and French (1993) methodology. We form six portfolios (S/L, S/M and S/H; B/L, B/M and B/H) by intersecting two groups that are arranged by ME = market value of equity, and BE/ME where BE = net tangible assets (equity capital plus reserves minus intangibles). Stocks with ME higher than the median are classified as 'big' (B); those with ME below the median are classified 'small' (S). For BE/ME the three breakpoints are bottom 30% ('Low'), middle 40% ('Medium') and top 30% ('High').[9] We calculate value-weighted monthly returns for the six portfolios from July of year t to June of year t+1, when we re-form the portfolios.

In order to explore the sources of the value premium, we divide our analysis into two stages. In the first stage we use measures of bankruptcy risk, proposed by Altman (1993), to investigate whether firms with a high likelihood of distress, measured by the Z-score, also have a high BE/ME or value premium.[10] Fama and French (1993) and Chen and Zhang (1998) offer empirical evidence to suggest high value firms are assigned a higher risk premium because they have a higher probability of distress, implying that bankruptcy risk is a systemic factor. Dichev (1998) and Griffin and Lemmon (2002) offer empirical evidence to reject the conjecture that bankruptcy risk is systematic and rewarded by higher returns. In

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8 This criterion is required to address the issue of survival bias (see Banz and Breen, 1986; Kothari, et al., 1995).

9 We do not use negative book equity (BE) firms when forming the size-BE/ME portfolios for lack of economic explanation.

10 We employ the Altman's (1993) model to evaluate the Z-score:

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5$$

X_1 = Working Capital / Total Assets

X_2 = Retained Earnings / Total Assets

X_3 = Earnings Before Taxes + Interest / Total Assets

X_4 = Market value of equity / Total Liabilities

X_5 = Net Sales / Total Assets

what follows, an inverse relationship between the Z-score and BE/ME ratio suggests the variables capture information related to a priced distress factor as in Fama and French (1993) and Chen and Zhang (1998). Alternatively, a positive relationship implies the two variables contain different information that is potentially related to differences in relative risk across firms (see Dichev, 1998; Griffin and Lemmon, 2002). In the context of this paper, we argue that the relative risk results from the idiosyncratic characteristics of each firm.

For the analysis of bankruptcy risk and value, we follow Griffin and Lemmon (2002) and construct a set of portfolios that we form according to the three indicators of BE/ME (small, medium and high value), the five quintiles of bankruptcy risk measured by the Z-score, and two size (ME) measures. The breakpoints for BE/ME are the 30th and 70th percentile points. For reporting purposes we show size-adjusted data, which are the simple averages of the means of the small and large stocks. Firms located in the lowest Z-score quintile have the highest probability of bankruptcy.

In the second stage we use 36-month rolling regressions to estimate the Fama and French (1995) three factor model to derive time varying HML coefficients for 25 portfolios sorted on size and BE/ME.[11] Changes in the loading over time reflect changes in business and financial risk. Subsequent analysis uses the estimated HML coefficients on growth and value portfolios as dependent variables. HML is interpreted to proxy firm characteristics which implies common variation in returns arises because individual portfolios comprise similar stocks with similar factor loadings irrespective of whether a firm is distressed or not. This interpretation follows Daniel and Titman (1997) and it contrasts the view of Fama and French (1993) that HML is proxy for distress probability. A preliminary analysis shows the Fama and French (1995) model provides an adequate description of portfolio returns for each

11 The three factor model is given by: $R_{pt}-R_{ft} = \alpha + b\,(R_{mt}-R_{ft}) + s\,SMB + h\,HML + \varepsilon$.

of the BTIC since none of the estimated alpha coefficients are significantly different from zero (see Table 1).[12]

[Insert Table 1 here]

We use panel data models to estimate the time-varying coefficient on HML for the i'th portfolio at time t on a set of conditioning variables known at time t. The conditioning variables are the current and lagged values of the natural logarithms of total assets and total debt. The assets variable captures the sensitivity of the coefficient on HML to growth whilst the debt variable measures sensitivity to leverage. GDP growth controls for macroeconomic conditions. Interaction variables allow for differences in the coefficients for value and growth portfolios. A Hausman test selects between fixed-effects and random-effects models.

V. Empirical Results

Table 2 reports the weighted monthly excess returns of the six size-BE/ME portfolios constructed using the three factor model (Fama and French, 1993) for each of the BTIC. For portfolios constructed using "big" stocks, we find statistically significant excess returns to value firms in excess of returns to growth firms in Turkey, India and China. In Brazil, excess return is highest for the intermediate band. For portfolios constructed using "small" stocks, excess returns are significant and higher for value firms in Brazil and China. Although this pattern repeats in Turkey the returns are not significant. In contrast, returns are significant and highest for growth firms in India. A positive and significant VMG (value minus growth) confirms the findings for Brazil, Turkey and China. VMG measures the difference in excess returns between value and growth portfolios and equals (B/H+S/H)/2–(B/L+S/L)/2. Our

12 The average value of beta is different from one depending on the orientation of firms in the economy. If the aggregate firm in the economy is value oriented then beta will be less than 1. This is consistent with studies which demonstrate that stocks with below market risk (low beta) yield higher risk adjusted return than predicted by the theoretical CAPM (see Black et al., 1972; Miller and Scholes, 1972), and evidence showing value firms have lower beta than growth firms (see Capaul et al., 1993).

evidence infers the existence of a value premium in each country except India. We conjecture the fast-growing information technology industry in India, containing many small high-technology firms, might account for the exceptionally high excess return in the SG portfolio.

[Insert Table 2 here]

In Table 3 we construct the portfolios as follows. Portfolios are sorted into small and large categories, and interlocked with value (using breakpoints at the 30th and 70th percentile points to define low, medium and high value) and the probability of bankruptcy as indicated in quintiles of Z-scores. Table 3 reports size-adjusted data, the simple average of small and large stocks, for bankruptcy risk, size, returns, and leverage.

Panel A shows little variation in the mean Z-scores between low value and high value portfolios in each country except for Indian firms in quintile one for low value stocks (-0.262) relative to their high value counterparts (0.803). The lowest (highest) Z-scores are in Brazil (Turkey). In the higher quintiles and across countries, low and high values stocks achieve similar Z-scores, which suggest the presence of value premium is not related to distress risk thereby contradicting Fama and French (1995). Panel B shows the average book-to-market ratio of the three stock groupings by quintiles of Z-score. On average in Brazil, India and China, high value firms in the lowest quintile achieve considerably larger book-to-market ratios, which again is inconsistent with the Fama and French hypothesis.

[Insert Table 3 here]

Table 3 also reports statistics on profitability, leverage, size (capitalization), and total assets for firms in each portfolio in order to further examine the hypothesis that the Z-score and BE/ME are related to characteristics purported to reflect distress risk. Panel C shows mean profitability is positively related to the Z-score, and is larger for high value firms in each country (except Turkey). Leverage is inversely related to the Z-score in each country (see Panel D). The data show high value and high risk firms are more heavily levered particularly in Brazil and India, which supports our earlier argument that value firms use more debt financing than growth firms. In Brazil and Turkey, low value stocks tend to be better capitalized (see Panel E) and larger in terms of total assets whereas high value firms are larger in terms of assets size in China and India (see Panel F).

Table 4 shows the results of rolling regressions estimations of the Fama and French three factor model for the six portfolios. Since our focus is on the coefficient of HML (h), we do not discuss other coefficients. HML is defined as the difference between the simple average returns on two high value portfolios (S/H and B/H) and two low value portfolios (S/L and B/L). All B/M portfolios (except China), B/H and S/H portfolios are associated with positive values on HML. That we observe positive loadings on value-orientated portfolios in each country demonstrates the presence of the value premium in those markets. We observe negative coefficients on HML for low value portfolios B/L and S/L across countries, and also for portfolio S/M (except Turkey). The findings demonstrate a difference in returns between portfolios of growth stocks ranked by firm size.

[Insert Table 4 here]

In spite of the apparent heterogeneity in loadings, our findings - at least for Brazil and China - are consistent with the contention of Fama and French (1995) that growth [value] stocks should have negative [positive] loadings. In contrast to Fama and French (1995) but consistent with Daniel and Titman (1997), we suggest the negative loading on growth firms is not a function of distress as our earlier analysis indicates the level of distress is comparable for growth and value firms. Rather, we that contend growth portfolios have lower loadings because the choice of delaying growth options gives growth firms the opportunity to reduce their risk. In addition, delaying the exercise of these options enables growth firms to accumulate and/or hoard cash. Our results offer support for claims that growth portfolios earn low returns because of a cash drag effect since cash generates very little return.

We contend that investors display an ‘infatuation’ with growth firms based on the potential growth opportunities stemming from embedded growth options. Thus, stock prices are driven upwards through bidding which contrasts with the ‘unspectacular’ value firms. In Lucas’ Rational Expectations framework (1978), growth firms constitute an ‘alluring’ asset, a point further extended by Sargent (1987). This interpretation reconciles the neoclassical and behavioral perspectives. The leverage of value firms causes a drag on their performance in poor economic environments particularly as leveraged equity displays volatility associated with financial options (see Merton, 1974). The expansion of the economy creates a bounce-back effect on value stocks, helping to reconcile the neoclassical perspective with the behavioral as espoused by DeBondt and Thaler (1985, 1987).

In light of our intuition, we graph the coefficients of HML for twenty of the 25 portfolios to provide further insight to our argument.[13] Figure 1a-d illustrate the patterns of time varying betas (coefficients of HML) for growth and value portfolios. The figures, with the exception of Turkey, demonstrate that value portfolios have higher beta and are more stable over time compared to growth portfolios.

[Insert Figure 1a-d here]

The exercise we report on above uses rolling regressions to estimate the three factor model. To check the robustness of the results, we re-estimate the models using static panel data techniques. A Hausman test finds the χ^2 statistic equal to 38.48 and statistically significant at the 1 percent level. The test result shows the fixed effects model is preferred to its random effects counterpart. Table 5 reports the fixed-effects estimation.

13 We categorize portfolios labelled with L1 and L2 as growth portfolios and L4 and L5 as value portfolios. Portfolios labelled with L3 are not graphed because they are neither growth nor value. In Figure 1a-d we present four graphs per country rather than 25. The remainder are available from the authors upon request.

Ex ante we expect growth portfolios to exhibit sensitivity to size (total assets) whereas value portfolios should display sensitivity to leverage. Using a binary variable to identify value portfolios, we create interaction variables between this indicator and size and leverage, at contemporaneous and lagged values for two periods to determine separate value portfolio effects. Lastly, the natural logarithm of GDP growth controls for business cycle effects.

The results show a positive and significant relation between HML and total assets lagged two periods at the 10 per cent significance level. However, the estimated coefficients on the interaction variables with total assets (β_6 and β_8) are negatively signed and statistically significant (except β_7 the coefficient on the one period lag interaction). The finding confirms the differential between value and growth portfolios in terms of the sensitivity of HML with respect to size. The estimated coefficient on leverage is negative (though insignificant) and suggests more highly levered portfolios are less sensitive. However, the interaction term between contemporaneous leverage and HML (β_9) is positive and highly significant, which signals value portfolios are very sensitive to leverage.

[Insert Table 5 here]

VI Robustness

We use an alternative procedure to construct portfolios to test the robustness of the results and construct twenty five intersecting size-value portfolios using the quintile breakpoints for ME and BE/ME and equally weighted monthly returns instead of value-weighted returns. To illustrate, using 'S' to indicate size and 'L' to indicate BE/ME, the portfolio S1L1 contains stocks that are ranked in the first quartile (less than 20%) of both size and value. Table A2 in the Appendix presents the data for the 25 portfolios and confirms the finding in Table 1 which demonstrates the Fama and French (1995) model adequately describes the portfolio returns. Table A3 reports the simple excess returns on the 25 portfolios by country and checks the robustness of findings reported in Table 2. The distribution of excess returns across portfolios lets us formulate some generalizations: first, excess returns on the highest value firms tend to be greater in comparison with low value firms; second, the distinction in returns by size is less marked and varies across countries. Table A3 shows the smallest firms achieve significant returns, which for some portfolios, exceed returns on larger firms. Both sets of our results confirm findings from several previous studies that show high value stocks achieve larger mean expected returns. In Table A4 we report robustness checks for findings in Table 4 using the set of 25 interlocking portfolios. The estimated HML coefficients exhibit intra and inter heterogeneity across the BTIC although some generalized country specific patterns are apparent. For instance, the value premium is supported by the positive loadings for medium-to-large sized and medium-to-high value portfolios in Brazil (except for the portfolio containing the largest and highest value stocks). In the case of China, we observe positive loadings for a limited number of portfolios, namely, portfolios of mid-to-large sized firms in the upper two quartiles of value. The loadings on portfolios in India and Turkey are all positive (with two exceptions for Turkey) yet it is difficult to discern hard patterns across size and value quintiles. Lastly, we observe the magnitude of loadings for India and Turkey to be greater relative to Brazil and China.

VII Conclusion

A number of theories are postulated to rationalize the source of the value premium yet the issue remains controversial. We reassess this issue for the BTIC group of countries that are characterized as having vast economic potential. The paper rationalizes the value premium in terms of economic fundamentals, attributing the premium to the investment patterns of growth firms that we contend are more likely to hoard cash, particularly during episodes of economic malaise. Although this behaviour is understood because it limits growth firms' exposure to risk, nevertheless it negatively impacts on both their market valuation and returns.

The paper helps to reconcile the diverging neoclassical views of Fama and French (1995) and Daniel and Titman (1997) in explaining the expected returns of value and growth stocks. Fama and French (1995) claim the HML coefficient measures distress risk whereas Daniel and Titman (1997) believe it captures firm characteristics. Our evidence offers support for the latter interpretation. We contest that growth firms are endowed with growth options, which entails capital outlay whilst enhancing business risk and it is this feature that differentiates growth firms from value firms. Value firms, by contrast, use fixed assets as collateral to lever up in order to boost earnings, which in turn aggravates financial risk. This interpretation of our findings is consistent with Chen et al. (2011).

We also reconcile the diverging neoclassical and behavioral perspectives by invoking a rational expectations perspective (Lucas, 1978) as extended by Sargent (1987). We consider the range of options available to growth firms provides a utility ('infatuation') that is separate from monetary returns in the forms of capital gains and dividends. This inherent utility of growth firms is attractive to investors and causes their stock prices to appreciate, which subsequently lowers returns.

Our empirical evidence offers three conclusions. Our first result re-confirms the presence of the value premium in emerging markets under favorable economic conditions. Second, value stocks and growth stocks are not characterized by different levels of distress as suggested by Fama and French (1995). We observe value firms are more highly levered than growth firms, which reconciles the behavioral perspective (DeBondt and Thaler, 1985, 1987) with the neoclassical perspective (Merton, 1974). We contend the leverage behavior of value firms exhibits characteristics similar to volatile financial options, which plummet very fast during economic downturns and rebound equally fast upon recovery. Our findings are robust to alternative means of portfolio construction.

Third, by observing the time varying pattern of conditional beta (HML) we find value (growth) portfolios are less (more) sensitive to size but more (less) sensitive to leverage. As a robustness check, fixed-effects methods demonstrate the value premium is attributable to economic fundamentals in a static framework. The finding that growth portfolios are sensitive to changes in total assets reaffirms our belief that the risk and return structure of growth firms is determined by their investment pattern. We believe our paper provides further insights on the source of the value premium, particularly in the context of the under-researched emerging economies.

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Table 1: Weighted Monthly Excess Returns for Portfolios Sorted on Size (ME) and Value (BE/ME) - July 1999 to June 2009, 120 Months (%)

Stocks with ME above the median are deemed ‘big’ whilst stocks with ME below the median are ‘small’. The breakpoints for BE/ME are the 30th and 70th percentiles. The intersection produces six portfolios: B/L = big-low value; B/M = big-middle value; B/H = big-high value; S/L = small-low value; S/M = small-middle value, S/H = small-high value. Returns are generated using the Fama and French (1993) three factor model: $R_{pt} - R_{ft} = \alpha + b (R_{mt}-R_{ft}) + s\ SMB + h\ HML + \varepsilon$.

*,**,*** indicate statistical significance at the 10, 5, and 1 percentage levels.

Portfolio	B/L	B/M	B/H	S/L	S/M	S/H
			Brazil			
α	1.89***	0.52	1.69***	1.16	1.35*	1.89***
b	0.22	0.86***	0.04	0.13	0.21*	0.24
s	-0.28**	-0.68***	-0.70***	0.86***	0.62**	0.12
h	-0.10	0.54***	0.56***	-0.73***	-0.26	0.82***
			Turkey			
α	0.52***	-2.18***	-0.04	-0.06	-1.18***	-0.31
b	1.26***	0.09***	0.35***	1.06***	0.54***	0.63***
s	-0.30***	0.98***	0.58***	1.88***	1.10***	1.25***
h	-0.32***	0.92***	0.63***	-0.07	0.38***	0.39***
			India			
α	-0.30*	0.63***	0.92	1.64**	0.05	-0.08
b	0.86***	1.12***	1.01***	1.34***	0.83***	0.98***
s	-0.04*	-0.07***	0.10	2.79***	0.44***	0.74***
h	-0.02	0.01	0.13*	-1.94***	0.21**	0.48***
			China			
α	-0.17	-0.02	-0.01	-0.00	0.12	-0.19**
b	0.96***	1.03***	1.01***	0.98***	0.96***	0.98***
s	0.02	-0.22***	-0.09	0.87***	0.78***	0.96***
h	-0.48***	-0.21***	0.57***	-0.39***	0.00	0.43***

Table 2: Weighted Monthly Excess Returns on Portfolios Sorted on Size and Value – July 1999 to June 2009, 120 Months: Summary Statistics (%)

Stocks with ME above the median are deemed 'big' whilst stocks with ME below the median are 'small'. The breakpoints for BE/ME are the 30th and 70th percentiles. The intersection produces six portfolios: B/L = big-low value; B/M = big-middle value; B/H = big-high value; S/L = small-low value; S/M = small-middle value, S/H = small-high value. VMG = value minus growth and is given by [{(S/H+B/H)/2}-{(S/L+B/L)/2}]. RPTRFT = return on portfolio minus the risk free rate. Returns are generated using the Fama and French (1993) three factor model: $R_{pt} - R_{ft} = \alpha + b\,(R_{mt}-R_{ft}) + s\,SMB + h\,HML + \varepsilon$.

We test $H_o = 0$; $H_1 > 0$. *,**,*** indicate significance at the 10, 5, and 1 percentage levels.

Portfolio	RPTRFT	Portfolio	RPTRFT
	Brazil		
B/L	2.13***	**S/L**	1.38**
B/M	2.21***	**S/M**	2.10***
B/H	1.82***	**S/H**	3.48***
VMG	0.895*		
	Turkey		
B/L	-0.84	**S/L**	1.19
B/M	0.62	**S/M**	0.47
B/H	1.70**	**S/H**	1.48
VMG	1.415*		
	India		
B/L	0.81	**S/L**	8.01**
B/M	2.10**	**S/M**	2.67***
B/H	2.81***	**S/H**	3.91***
VMG	-1.05		
	China		
B/L	0.12	**S/L**	0.76
B/M	0.37	**S/M**	1.09*
B/H	0.92*	**S/H**	1.13*
VMG	0.585***		

Table 3: Firm Characteristics for Portfolios Sorted on Value, Distress Probability and Size - Summary Statistics

Portfolios are formed by intersecting BE/ME (low, medium, high - the breakpoints are at the 30th and 70th percentile points); five quintiles of bankruptcy risk (Z-score); and two size (ME) measures (above and below the median). We report size-adjusted data i.e. the simple averages of the means of the small and large stocks. Firms from July 1999 to June 2009 are ranked independently every June.

BE/ME	***Low***	***Medium***	***High***	***Low***	***Medium***	***High***
			Panel A: Z-score			
Z-score		***Brazil***			***Turkey***	
1	0.560	0.572	0.418	0.735	0.811	0.772
2	1.414	1.389	1.608	2.105	2.160	2.051
3	2.060	2.303	2.019	3.517	3.486	3.524
4	3.590	3.157	3.040	8.939	8.810	7.979
5	7.201	8.710	8.162	69.948	62.708	69.621
		India			***China***	
1	-0.262	0.940	0.803	1.147	1.454	1.352
2	1.811	1.898	1.738	2.757	2.645	2.575
3	2.910	2.911	2.490	4.277	4.145	3.891
4	5.320	4.312	5.190	7.185	6.760	6.689
5	20.919	18.018	17.388	15.893	16.027	16.800
			Panel B: BE/ME (book-to-market equity)			
Z-score		***Brazil***			***Turkey***	
1	0.563	2.236	13.40	0.424	1.071	2.676
2	0.425	2.074	10.04	0.439	1.079	2.265
3	0.528	2.023	8.526	0.509	1.059	1.986
4	0.467	2.060	9.570	0.429	1.046	2.401
5	0.542	1.917	9.191	0.431	1.021	2.110
		India			***China***	
1	0.233	0.915	12.935	0.169	0.391	2.029
2	0.241	0.826	5.477	0.186	0.386	0.890
3	0.282	0.769	9.165	0.189	0.379	0.784
4	0.242	0.807	2.640	0.185	0.376	0.730
5	0.211	0.788	1.800	0.194	0.382	0.664
			Panel C: RoA (income before extraordinary items and tax/total assets)			
Z-score		***Brazil***			***Turkey***	
1	-0.561	2.582	4.204	2.129	2.518	1.161
2	8.242	7.777	10.039	10.329	11.724	8.022
3	11.840	11.093	9.718	10.876	8.793	10.851
4	12.801	11.389	12.408	11.407	11.779	11.443
5	12.895	12.508	16.960	11.201	11.186	10.703
		India			***China***	
1	1.279	1.113	4.326	-3.133	1.824	2.796
2	3.016	7.057	8.916	1.942	3.603	4.181
3	8.164	9.622	10.18	3.184	4.505	4.971
4	11.293	13.055	16.138	4.574	5.539	5.836
5	10.369	13.715	5.989	5.783	5.913	5.427

BE/ME	Low	Medium	High	Low	Medium	High
	Panel D: Leverage (total assets - book equity / market value of equity)					
Z-score	***Brazil***			***Turkey***		
1	2.373	5.260	13.883	38.514	47.914	17.290
2	1.687	3.526	12.184	2.407	3.945	1.839
3	2.347	2.235	4.987	1.595	1.887	3.097
4	0.664	1.401	2.871	0.192	0.195	0.542
5	0.294	0.311	0.686	0.019	0.0228	0.017
	India			***China***		
1	1.851	3.648	22.492	0.683	0.897	2.261
2	0.773	1.412	3.951	0.375	0.458	0.736
3	0.566	0.671	11.65	0.249	0.299	0.366
4	0.210	0.513	0.482	0.142	0.171	0.187
5	0.084	0.111	0.054	0.604	0.060	0.067
	Panel E: Size (US$ m, market value of equity)					
Z-score	***Brazil***			***Turkey***		
1	1,159	785	126	443	116	47
2	1,515	1,629	572	447	194	141
3	3,491	1,594	491	664	381	205
4	10,800	5,086	166	1,921	273	116
5	2,558	642	71	1,575	698	571
	India			***China***		
1	11,000	15,400	3,463	2,969	4,116	3,682
2	46,800	9,978	3,201	3,106	4,171	5,050
3	27,100	30,100	4,202	3,518	6,638	6,306
4	81,600	95,200	3,381	4,495	8,669	5,073
5	33,000	8,027	692	4,147	12,100	3,314
	Panel F: Total Assets (US$ m, book value)					
Z-score	***Brazil***			***Turkey***		
1	3,339	3,995	1,800	6,824	3,845	3,232
2	3,776	7,321	3,066	1,135	1,600	938
3	4,274	4,914	1,827	1,215	1,201	871
4	14,600	8,870	975	1,099	433	265
5	2,212	799	245	389	323	243
	India			***China***		
1	3,9200	49,700	53,200	3,292	6,413	8,261
2	5,6100	27,600	23,400	2,265	4,077	7,660
3	2,0200	32,222	56,500	2,058	5,076	8,662
4	7,0700	55,000	10,200	1,946	6,623	5,983
5	1,0300	8,255	2,416	1,549	4,345	3,035

Table 4: Mean Coefficients of Rolling Regressions: Portfolios Sorted on Size and Value

Stocks with ME above the median are deemed ‘big’ whilst stocks with ME below the median are ‘small’. The breakpoints for BE/ME are the 30th and 70th percentiles. The intersection produces six portfolios: B/L = big-low value; B/M = big-middle value; B/H = big-high value; S/L = small-low value; S/M = small-middle value, S/H = small-high value. The coefficients are estimated from 36 month rolling regressions of the Fama and French (1993) three factor model: $R_{pt} - R_{ft} = \alpha + b\,(R_{mt}-R_{ft}) + s\,SMB + h\,HML + \varepsilon$. Rm - Rf is the return on the market portfolio less the risk free rate. SMB is the difference between the simple average of returns on small stock portfolios (S/L, S/M, S/H) and big stock portfolios (B/L, B/M, B/H). HML is the difference between the simple average of returns on two high value portfolios (S/H, B/H) and returns on two low value portfolios (S/L, B/L).

	B/L	**B/M**	**B/H**	**S/L**	**S/M**	**S/H**
			Brazil			
Constant, α	1.497	0.869	1.135	0.611	1.062	1.408
Rm-Rf, b	0.566	0.697	0.201	0.158	0.232	0.582
SMB, s	-0.046	-0.828	-0.900	1.115	0.324	0.412
HML, h	-0.199	0.599	0.782	-0.950	-0.026	0.666
			Turkey			
Constant, α	0.544	-2.233	0.126	-0.093	-1.108	-0.457
Rm-Rf, b	1.210	0.037	0.730	0.885	0.596	0.568
SMB, s	-0.308	0.996	0.061	1.981	0.912	1.265
HML, h	-0.296	0.977	0.283	0.090	0.335	0.438
			India			
Constant, α	-0.221	0.487	1.124	1.294	0.026	-0.050
Rm-Rf, b	0.918	1.067	1.006	1.194	0.987	0.968
SMB, s	0.141	-0.245	0.006	2.052	1.134	0.645
HML, h	-0.243	0.200	0.373	-1.416	-0.342	0.532
			China			
Constant, α	0.001	0.043	-0.015	-0.048	-0.217	-0.087
Rm-Rf, b	1.002	1.008	1.009	0.983	0.907	0.986
SMB, s	-0.185	-0.199	-0.178	0.749	0.518	0.892
HML, h	-0.639	-0.223	0.538	-0.422	-0.064	0.337

Table 5: Fixed effects regression of the sensitivity of HML

HML is the difference between the simple average of returns on two high value portfolios (S/H, B/H) and returns on two low value portfolios (S/L, B/L). It is calculated for 20 portfolios sorted on size (BE) and value (BE/ME) using quintile breakpoints, and is recalculated when the portfolios are rebalanced. We use a fixed effects regression to estimate the model:

$HML = \alpha + \beta_0$ Total Assets$_{it}$ + β_1 Total Assets$_{it-1}$ + β_2 Total Assets$_{it-2}$ + β_3Leverage$_{it}$ + β_4Leverage$_{it-1}$ + β_5Leverage$_{it-2}$+ β_6Total Assets * D$_{it}$ + β_7Total Assets * D$_{it-1}$ + β_8Total Assets * D$_{it-2}$ + β_9Leverage * D$_{it}$ + β_{10}Leverage * D$_{it-1}$ + β_{11}Leverage * D$_{it-2}$ + β_{12} GDP$_t$ + η_{i} + η_t + ε_{it}

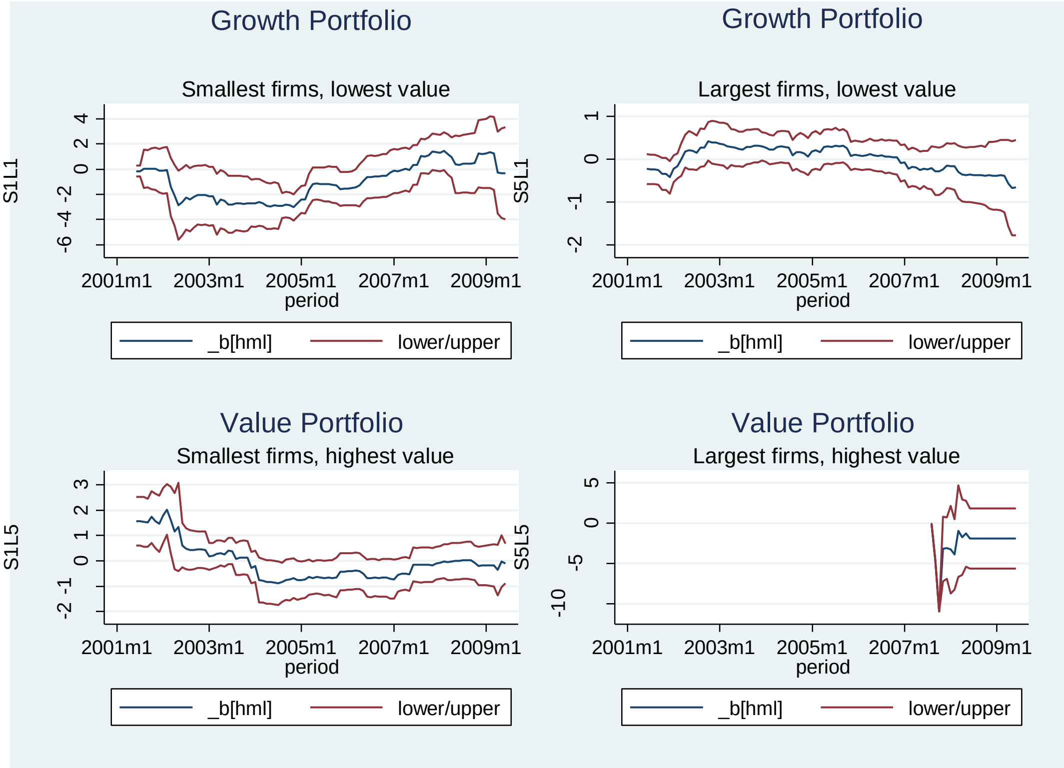
Where: η_i is an unobserved portfolio-specific effect and η_t captures common period-specific effects; ε_{it} is an error term, which represents measurement errors and other explanatory variables that have been omitted. It is assumed to be independently identical normally distributed with zero mean and constant variance. D is a dummy variable taking the value of unity if the portfolio is value and 0 otherwise.

*, **, *** indicate significance at 10%, 5% and 1% respectively.

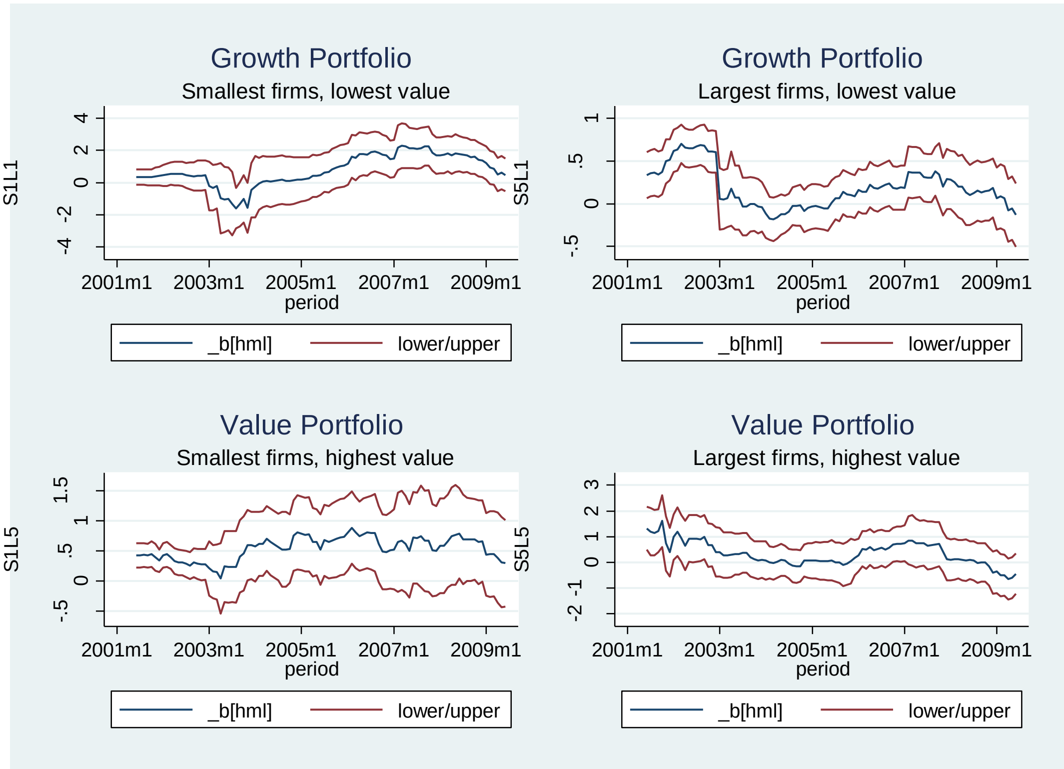
Independent Variables	**Coefficient**	**t**
Total Assets	0.0442	0.50
Total Assets$_{t-1}$	-0.0403	-0.41
Total Assets$_{t-2}$	0.1651*	1.80
Total Leverage	-0.0910	-1.48
Total Leverage$_{t-1}$	0.0613	0.81
Total Leverage$_{t-2}$	-0.0797	-1.19
Total Assets * D	-0.2980**	-2.06
Total Assets * D$_{t-1}$	-0.1534	-0.97
Total Assets * D$_{t-2}$	-0.2982**	-2.04
Total Debt * D	0.2932***	2.67
Total Debt * D$_{t-1}$	0.0748	0.62
Total Debt * D$_{t-2}$	0.1572	1.43
GDP growth	-0.0034	-0.41
Constant	1.0999	1.45

Figure 1a-d

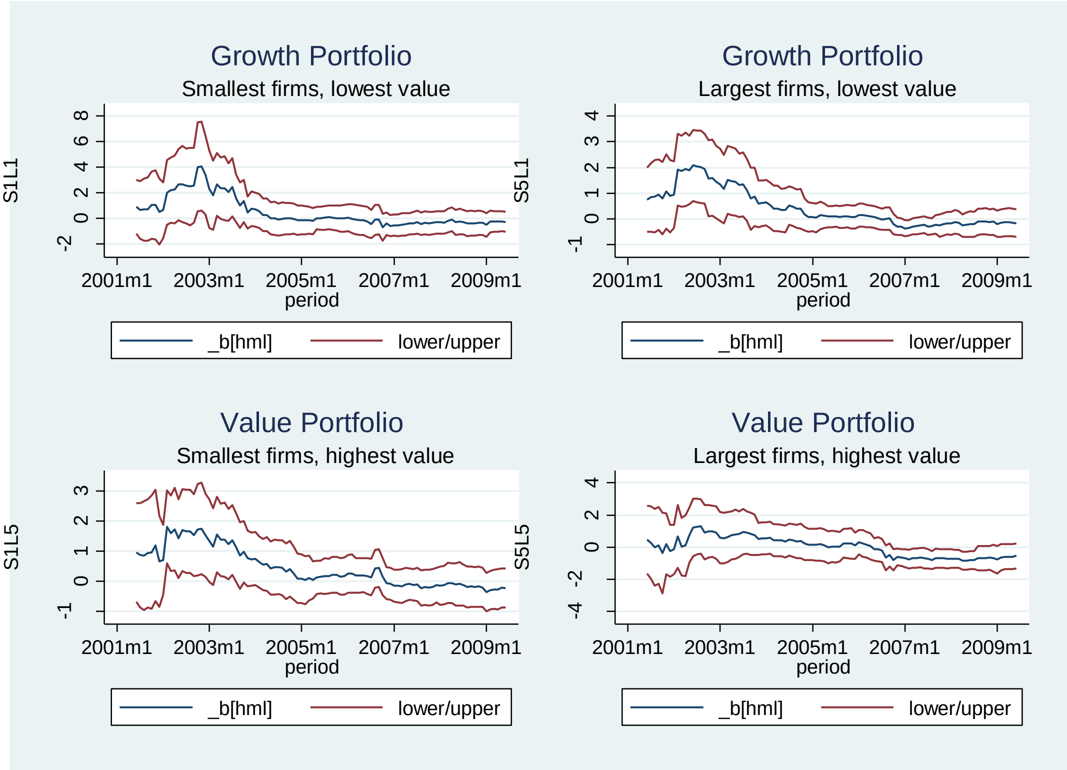
1a. Patterns of HML for Portfolios sorted on Size and BE/ME: Brazil



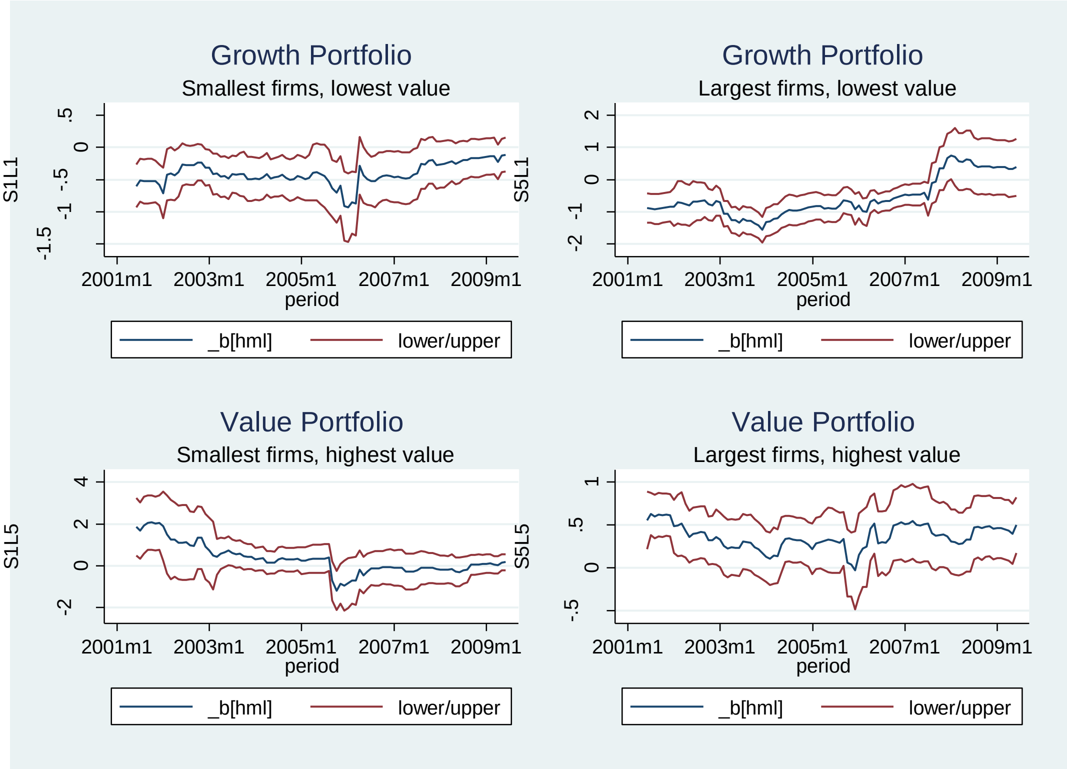
1b. Patterns of HML for Portfolios sorted on Size and BE/ME: Turkey



1c. Patterns of HML for Portfolios sorted on Size and BE/ME: India



1d. Patterns of HML for Portfolios sorted on Size and BE/ME: China



Appendix

Table A1: Portfolio composition - numbers of firms: by country and year

Portfolio	BRAZIL										
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**Total**
BG	23	30	30	30	31	32	29	36	35	44	320
BM	21	30	31	31	32	32	38	34	36	40	325
BV	23	8	4	10	8	7	4	8	14	10	96
SG	8	8	7	8	7	7	11	7	12	7	82
SM	20	20	16	15	16	18	18	24	25	31	203
SV	29	37	42	41	46	46	45	46	53	56	441
Total	124	133	130	135	140	142	145	155	175	188	1467

Portfolio	TURKEY										
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**Total**
BG	18	21	22	25	23	26	28	28	32	32	255
BM	13	16	21	22	23	27	22	25	32	35	236
BV	7	6	6	10	13	9	13	15	14	12	105
SG	5	6	8	10	13	12	11	13	16	12	105
SM	17	17	17	22	24	22	27	29	29	27	231
SV	16	21	24	25	23	29	26	26	34	36	260
Total	76	87	98	114	119	125	127	136	157	158	1197

Portfolio	INDIA										
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**Total**
BG	36	41	40	43	44	47	57	58	63	67	496
BM	27	26	35	39	48	44	54	55	56	63	447
BV	3	7	5	6	6	9	14	18	17	13	98
SG	4	4	9	11	15	14	18	21	19	19	134
SM	26	32	28	30	30	35	46	50	53	51	381
SV	37	38	44	48	53	52	61	61	65	73	532
Total	133	148	161	177	196	201	250	263	273	286	2088

Portfolio	CHINA										
	1999	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**Total**
BG	81	94	106	111	119	136	158	170	205	208	1388
BM	131	149	160	174	179	213	219	215	213	270	1923
BV	103	115	157	171	190	165	177	167	165	154	1564
SG	108	121	149	163	175	173	175	162	146	172	1544
SM	121	137	177	190	210	198	224	226	252	235	1970
SV	86	100	98	103	104	144	156	165	186	226	1368
Total	630	716	847	912	977	1029	1109	1105	1167	1265	9757

Table A2: Simple Monthly Excess Returns for Portfolios Sorted on Size and Value - 7/1999-6/2009, 120 Months (%)

We construct 25 portfolios by intersecting size (BE) and value (BE/ME) using quintile breakpoints. For instance S1L1 refers to the lowest quintiles (bottom 20%) in size and value. We generate returns using a three factor model: $R_{pt} - R_{ft} = \alpha + b\,(R_{mt}-R_{ft}) + s\,SMB + h\,HML + \varepsilon$ (Fama and French, 1993).
*,**,*** indicate statistical significance at the 10, 5, and 1 percentage levels.

Brazil

Value	***Low***	***2***	***3***	***4***	***High***
Size			**α**		
Small	3.18*	0.26	7.54*	3.03**	4.45***
2	0.31	2.75**	1.95**	3.11***	2.86***
3	0.86	2.54**	2.92**	1.65***	3.14*
4	2.57***	1.74*	2.10**	2.60***	4.56***
Big	1.56**	1.91**	3.16***	2.66***	2.54
			b		
Small	0.05	0.06	0.49	0.15	0.12
2	0.17	0.17	0.32	0.18	0.21
3	0.29***	0.1	0.17	0.20*	0.05
4	0.15	0.35***	0.24	0.21	-0.09
Big	0.19	0.13	0.18	0.19	1.49
			s		
Small	1.01*	0.29	-0.56	0.14	0.52**
2	0.43	0.70	0.09	0.42	-0.39*
3	0.12	-0.02	0.48	0.21	-0.19
4	0.03	0.26**	-0.23	-0.34*	-0.77***
Big	-0.12	-0.53**	-0.73***	-0.75***	2.64**
			h		
Small	-0.49	-0.30	0.29	-0.04	0.13
2	-0.46	0.24	0.15	0.01	0.71***
3	0.08	0.01	-0.21	0.01	0.97***
4	-0.15	-0.14	0.18	0.26*	0.82***
Big	-0.05	0.23	0.34*	0.43***	-1.85

Turkey

Size			**α**		
Small	-1.68	0.65	-0.75	-0.11	0.04
2	0.23	-0.91	-0.65	-0.50	-0.35
3	1.40	-0.64	-1.12***	-0.94	0.37
4	-1.61**	-1.24***	-1.84***	0.26	-0.19
Big	-0.72	-1.54**	-2.08***	-1.26	1.38
			b		
Small	0.46**	0.74***	0.34***	0.54***	0.55***
2	1.49*	0.61***	0.58***	0.65***	0.36***
3	0.94***	0.57**	0.45***	0.47***	0.75***
4	0.46***	0.34***	0.23*	0.34***	0.45***
Big	0.61***	0.36**	0.08	0.41***	0.44**
			s		
Small	1.45***	0.89***	1.04***	1.16***	1.13***
2	2.54**	1.17***	0.93***	1.29***	1.34***
3	1.45***	0.78**	1.14***	1.15***	1.37***
4	0.99***	0.94***	1.12***	0.97***	0.92***
Big	0.37**	0.94***	0.89***	0.92***	0.29
			h		
Small	0.51***	0.04	0.54***	0.37***	0.44***
2	0.04	0.42***	0.41***	0.36***	0.66***
3	-0.11	0.30	0.55***	0.41***	0.51***
4	0.53***	0.63***	0.77***	0.64***	0.55***
Big	0.25	0.72***	0.98***	0.70***	0.57***

India

Value	*Low*	*2*	*3*	*4*	*High*
Size			**α**		
Small	2.14	2.65*	2.33*	3.06**	3.28***
2	2.46	2.29*	2.46	2.66*	3.78***
3	3.84	1.62*	2.18	2.25**	3.55**
4	1.78	2.13	1.95*	3.53**	1.37
Big	0.98	1.85	1.76	1.95	4.30***
			b		
Small	0.26	0.31**	0.32**	0.33**	0.33**
2	0.55***	0.41**	0.55	0.47***	0.44**
3	0.13	0.56***	0.41***	0.35***	0.42***
4	0.28*	0.40**	0.35**	0.39**	0.33**
Big	0.46***	0.43**	0.52***	0.47***	0.51***
			s		
Small	-0.01	0.06	0.12	-0.03	-0.01
2	0.24	-0.02	0.24	-0.05	-0.08
3	0.05	0.00	0.04	0.01	0.06
4	-0.02	0.04	0.04	0.06	0.08
Big	0.08	0.04	0.05	0.01	0.06
			h		
Small	0.01	0.04	0.09	0.07*	0.06
2	0.22	0.01	0.22	0.03	-0.04
3	0.04	0.79	0.05	0.05	0.11**
4	0.08	0.03	0.12***	0.11*	0.08
Big	0.06	0.10*	0.08	0.08	0.02

China

Size			**α**		
Small	0.56***	0.91***	1.55**	1.95***	1.06**
2	-0.02	1.18**	1.34**	1.70***	1.38**
3	0.17	0.14	0.31	0.96*	0.30
4	-0.22	0.35	0.23	0.42**	0.20
Big	-0.10	0.22	0.15	0.24	0.24*
			b		
Small	0.85***	0.90***	0.67***	0.62***	1.14***
2	1.02***	0.89***	0.73***	0.58***	0.75***
3	0.74***	0.81***	0.97***	0.80***	0.96***
4	0.99***	0.97***	0.79***	1.04***	1.02***
Big	0.72***	0.93***	0.92***	0.96***	1.04***
			s		
Small	0.93***	0.88***	0.32	-0.17	0.99***
2	0.86***	0.47**	0.21	0.16	0.21
3	0.79***	0.84***	0.71***	0.28	0.78***
4	0.66***	0.26***	0.65***	0.68***	0.64***
Big	0.20*	0.17**	0.11**	0.12**	0.06
			h		
Small	-0.32***	-0.30**	-0.25	-1.15***	0.28
2	-0.29***	-0.70***	-0.55**	-0.79*	-0.42
3	-0.11	0.21	0.00	-0.46*	0.32**
4	-0.34***	-0.30**	0.14	0.07	0.41***
Big	-0.26	-0.36***	-0.03	0.20***	0.48***

Table A3: Simple Monthly Excess Returns on Portfolios Sorted on Size and Value – July 1999 to June 2009, 120 Months: Summary Statistics (%)

We construct 25 portfolios by intersecting size (BE) and value (BE/ME) using quintile breakpoints. For instance S1L1 refers to the lowest quintiles (bottom 20%) in size and value. PT = portfolio and RPTRFT = return on portfolio minus the risk-free rate. We generate returns using a three factor model: $R_{pt} - R_{ft} = \alpha + b\,(R_{mt}-R_{ft}) + s\,SMB + h\,HML + \varepsilon$ (Fama and French, 1993).

We test $H_o = 0$; $H_1 > 0$. *,**,*** indicate significance at the 10, 5, and 1 percentage levels.

PT	RPTRFT	PT	RPTRFT	PT	RPTRFT	PT	RPTRFT	PT	RPTRFT
				Brazil					
S1L1	3.59**	**S2L1**	0.62	**S3L1**	1.69**	**S4L1**	2.81***	**S5L1**	1.90***
S1L2	0.26	**S2L2**	4.02***	**S3L2**	2.78***	**S4L2**	2.69***	**S5L2**	2.07***
S1L3	8.97***	**S2L3**	3.02***	**S3L3**	3.52***	**S4L3**	2.72***	**S5L3**	3.39***
S1L4	3.48***	**S2L4**	3.93***	**S3L4**	2.34***	**S4L4**	3.15***	**S5L4**	3.00***
S1L5	5.30***	**S2L5**	3.85***	**S3L5**	4.16***	**S4L5**	4.35***	**S5L5**	0.46
				Turkey					
S1L1	0.58	**S2L1**	2.18	**S3L1**	2.21	**S4L1**	0.26	**S5L1**	-0.60
S1L2	1.31	**S2L2**	0.84	**S3L2**	0.53	**S4L2**	0.84	**S5L2**	0.71
S1L3	1.22	**S2L3**	0.74	**S3L3**	0.94	**S4L3**	0.73	**S5L3**	0.75
S1L4	1.56	**S2L4**	1.24	**S3L4**	0.84	**S4L4**	2.39**	**S5L4**	0.89
S1L5	1.82*	**S2L5**	2.15*	**S3L5**	2.47*	**S4L5**	0.76	**S5L5**	3.54***
				India					
S1L1	2.51*	**S2L1**	4.18	**S3L1**	4.21**	**S4L1**	2.26**	**S5L1**	1.94**
S1L2	3.31**	**S2L2**	2.84**	**S3L2**	2.53**	**S4L2**	2.84***	**S5L2**	2.71**
S1L3	3.22***	**S2L3**	2.82**	**S3L3**	2.94**	**S4L3**	2.73**	**S5L3**	2.75**
S1L4	3.56***	**S2L4**	3.24***	**S3L4**	2.84**	**S4L4**	4.39***	**S5L4**	2.83**
S1L5	3.82***	**S2L5**	4.15***	**S3L5**	4.47***	**S4L5**	2.16**	**S5L5**	5.38***
				China					
S1L1	1.31**	**S2L1**	0.83	**S3L1**	0.93*	**S4L1**	0.49	**S5L1**	0.27
S1L2	1.69***	**S2L2**	1.51**	**S3L2**	1.17**	**S4L2**	0.87*	**S5L2**	0.65
S1L3	2.00***	**S2L3**	1.54**	**S3L3**	1.23**	**S4L3**	1.11**	**S5L3**	0.74
S1L4	1.53**	**S2L4**	1.63**	**S3L4**	1.29**	**S4L4**	1.43**	**S5L4**	1.01*
S1L5	2.40***	**S2L5**	1.67**	**S3L5**	1.46**	**S4L5**	1.39**	**S5L5**	1.20**

Table A4: Mean Coefficients of Rolling Regressions: Portfolios sorted on Size and Value

See Table A2. We estimate coefficients on 36 month rolling regressions of a three factor model: $R_{pt} - R_{ft} = \alpha + b (R_{mt}-R_{ft}) + s\ SMB + h\ HML + \varepsilon$. Rm - Rf is the return on the market portfolio less the risk-free rate. SMB is the difference between the simple average of returns on small stock (S/L, S/M, S/H) and big stock portfolios (B/L, B/M, B/H). HML is the difference between the simple average of returns on high value (S/H, B/H) and low value portfolios (S/L, B/L).

	L1	L2	L3	L4	L5	L1	L2	L3	L4	L5
					Brazil					
			Constant					**Market**		
S1	4.810	-0.544	4.752	3.298	3.740	0.097	0.194	0.296	0.212	0.312
S2	-0.179	3.387	1.571	3.135	2.802	0.211	0.321	0.361	0.124	0.570
S3	0.249	2.432	1.921	1.056	3.471	0.386	0.144	0.278	0.325	0.155
S4	2.220	1.129	1.890	2.007	2.078	0.001	0.256	0.225	0.313	-0.620
S5	1.257	1.066	2.194	1.715	4.023	0.372	0.317	0.526	0.503	1.534
			SMB					**HML**		
S1	1.742	0.309	-2.341	0.382	0.841	-0.996	-0.297	1.157	-0.228	-0.046
S2	0.760	0.951	0.087	0.464	-0.257	-0.769	-0.080	0.087	-0.081	0.777
S3	-0.030	0.165	0.024	-0.063	-0.106	0.275	-0.145	0.207	0.288	0.809
S4	-0.242	0.219	-0.304	-0.320	-0.513	0.100	-0.121	0.166	0.284	0.462
S5	-0.158	-0.457	-0.700	-0.474	3.483	0.002	0.259	0.369	0.363	-2.465
					Turkey					
			Constant					**Market**		
S1	-1.212	1.174	-0.760	-0.389	-0.059	0.025	0.733	0.390	0.453	0.352
S2	-2.760	-0.676	-0.783	-1.238	-0.209	0.494	0.644	0.226	0.471	0.262
S3	3.367	-1.641	-1.012	-1.506	0.126	1.320	0.239	0.460	0.576	0.671
S4	-2.311	-1.407	-2.324	-0.132	-0.533	0.174	0.320	0.144	0.390	0.631
S5	-0.822	-1.396	-2.300	-0.862	1.062	0.727	0.311	0.295	0.552	0.583
			SMB					**HML**		
S1	1.347	0.494	1.108	1.096	1.110	0.771	-0.085	0.552	0.459	0.541
S2	1.935	0.920	0.959	1.107	1.321	0.655	0.397	0.696	0.514	0.692
S3	1.995	1.194	1.031	1.020	1.255	-0.326	0.774	0.518	0.392	0.547
S4	0.917	0.957	1.142	1.008	0.919	0.637	0.654	0.894	0.670	0.499
S5	0.311	0.708	0.803	0.396	-0.062	0.186	0.662	0.838	0.418	0.336
					India					
			Constant					**Market**		
S1	1.407	1.820	1.594	1.590	2.194	-0.005	0.407	0.182	0.206	0.179
S2	-0.411	1.258	1.038	0.988	2.835	0.263	0.282	0.332	0.336	0.220
S3	5.427	0.507	1.177	1.010	2.425	-0.322	0.362	0.327	0.267	0.238
S4	0.115	0.896	1.003	2.400	0.138	0.147	0.225	0.157	0.248	-0.050
S5	0.189	0.748	-0.023	0.681	3.002	0.291	0.275	0.476	0.424	0.578
			SMB					**HML**		
S1	-0.690	-0.075	-0.745	-0.601	-0.519	0.573	0.171	0.695	0.505	0.416
S2	-0.545	-0.669	-0.571	-0.644	-0.705	0.661	0.414	0.497	0.524	0.426
S3	-0.455	-0.689	-0.670	-0.697	-0.773	0.329	0.645	0.438	0.507	0.731
S4	-0.643	-0.600	-0.654	-0.711	-1.576	0.616	0.489	0.623	0.615	0.672
S5	-0.448	-0.588	-0.632	-0.525	-0.287	0.438	0.519	0.560	0.406	0.079
					China					
			Constant					**Market**		
S1	0.608	0.706	0.505	0.413	0.461	0.852	0.847	0.595	0.468	1.119
S2	-0.191	0.619	0.686	0.325	1.808	1.021	0.751	0.398	0.418	0.844
S3	0.252	0.467	0.053	-0.127	0.300	0.882	0.873	0.843	0.674	0.874
S4	0.158	0.486	0.671	0.456	0.353	1.063	0.997	0.865	1.021	1.032
S5	0.347	0.489	0.467	0.379	0.425	0.908	0.949	0.967	0.972	1.030
			SMB					**HML**		
S1	0.842	0.724	-0.023	0.019	1.199	-0.409	-0.406	-0.177	-0.440	0.317
S2	0.791	0.623	0.314	0.473	0.391	-0.312	-0.352	-0.355	0.021	-0.232
S3	0.633	0.781	0.548	0.523	0.654	-0.131	0.108	0.002	0.037	0.328
S4	0.498	0.243	0.283	0.512	0.493	-0.662	-0.385	-0.057	0.133	0.280
S5	-0.230	-0.122	-0.064	0.002	-0.060	-0.562	-0.543	-0.101	0.096	0.364